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A.D. 1873, 29th APRIL. N° 1555.

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## Treatment of Sewage.

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LETTERS PATENT to Walter Brown, of 30, Pulross Road, Stockwell, in the County of Surrey, for the Invention of “IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE MANUFACTURE OF MANURE THEREFROM.”

Sealed the 24th October 1873, and dated the 29th April 1873.

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PROVISIONAL SPECIFICATION left by the said Walter Brown at the Office of the Commissioners of Patents, with his Petition, on the 29th April 1873.

I, WALTER BROWN, of 30, Pulross Road, Stockwell, in the County  
5 of Surrey, do hereby declare the nature of the said Invention for “IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE MANUFACTURE OF MANURE THEREFROM,” to be as follows:—

This Invention has for its object the complete disinfection of sewage  
water as discharged from sewers, not only as regards the defecating or  
10 clarifying it from its suspended solid contents, but also the complete  
separation of all noxious gases with which such sewage may be



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impregnated, thus preventing all injurious effluvium and subsequent fermentation, and further corruption of the effluent water. At the same time retaining the active and fermentative qualities of the sewage, and thus producing a valuable manure.

The mode of operation is as follows,—

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First. I make use of shaly minerals, by preference that known as black stone, or any other minerals possessing similar properties thereto, selecting only such as by calcination in manner hereafter described afford a residue of charcoal combined with any friable earthy matter, preferably such as contain silica united with alumina in their consti- 10  
tuents, rejecting such as yield a hard stony residue.

Second. I calcine the black stone or other mineral before described in vessels closed so as to exclude the atmospheric air, which if admitted would impair the utility of the resulting residue. This calcination may be carried on at a heat short of a red heat, and the vapours arising 15  
therefrom may be condensed by suitable apparatus, which is too well known to need description, so as to form mineral oil ; or the distillation may be at once begun at a red heat, and the vapours used as gas for illuminating and other purposes.

In either case it is necessary that the residue should be brought to a 20  
red heat, so as to completely drive out all gaseous, oily, and bituminous constituents from the black stone or other mineral without allowing the atmospheric air to enter the chamber during such process. The residue may then be taken from the calcining vessels or retorts, and quenched, but not quite cooled, with water. It is advisable then to cover it up 25  
with sand till quite cold, but this is not absolutely necessary. It is then to be broken into pieces of a size suitable to the purpose to which it is to be applied, for example, if for sewage works the dust resulting from the breakage may be scattered amongst it, so as to form a filter bed, through which the sewage is to be passed ; or if to be used for any 30  
other purpose it should be ground to coarse powder, and added to the sewage to be disinfected in a drain or otherwise.

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**SPECIFICATION** in pursuance of the conditions of the Letters Patent, filed by the said Walter Brown in the Great Seal Patent Office on the 29th October 1873.

**TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WALTER**  
5 **BROWN**, of 30, Pulross Road, Stockwell, in the County of Surrey, send greeting.

**WHEREAS** Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-ninth day of April, in the year of our Lord One thousand eight hundred and seventy-three, in the  
10 thirty-sixth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Walter Brown, Her special licence that I, the said Walter Brown, my executors, administrators, and assigns, or such others as I, the said Walter Brown, my executors, administrators, and assigns, should at any time agree with, and no others, from time to  
15 time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands and Isle of Man, an Invention for “**IMPROVEMENTS IN THE TREATMENT OF SEWAGE, AND IN THE MANUFACTURE OF MANURE THEREFROM,**” upon the con-  
20 dition (amongst others) that I, the said Walter Brown, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent  
25 Office within six calendar months next and immediately after the date of the said Letters Patent.

**NOW KNOW YE**, that I, the said Walter Brown, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by  
30 the following statement, that is to say:—

This Invention has for its object the complete disinfection of urine as discharged from public urinals or otherwise, and sewage water as discharged from sewers or works after it has been subjected to the process of precipitation or otherwise, not only as regards the defecating or  
35 clarifying it from its suspended solid contents, and all putrescible organic matter, but also the complete separation of all noxious gases



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with which such sewage may be impregnated, thus preventing all injurious effluvium and subsequent fermentation, and further corruption of the effluent water, at the same time retaining the active and fermentative qualities of the sewage, and thus producing a valuable manure.

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The mode of operation is as follows ;—

First. I make use of shaly minerals, by preference that known as black stone, or any other minerals possessing similar properties thereto, selecting only such as by calcination in manner hereafter described afford a residue of charcoal combined with any friable earthy matter, 10 preferably such as contain silica united with alumina in their constituents, rejecting such as yield a hard stony residue.

Second. I calcine the black stone or other mineral before described in vessels closed so as to exclude the atmospheric air, which if admitted would impair the utility of the resulting residue. This calcination may 15 be carried on at a heat short of a red heat, and the vapours arising therefrom may be condensed by suitable apparatus, which is too well known to need description, so as to form mineral oil ; or the distillation may be at once begun at a red heat, and the vapours used as gas for illuminating and other purposes. 20

In either case it is necessary that the residue should be brought to a red heat, so as to completely drive out all gaseous, oily, and bituminous constituents from the black stone or other mineral without allowing the atmospheric air to enter the chamber during such process. The residue may then be taken from the calcining vessels or retorts, and quenched, 25 but not quite cooled, with water. It is advisable then to cover it up with sand till quite cold, but this not absolutely necessary. It is then to be broken into pieces of a size suitable to the purpose to which it is to be applied, for example, if for urinals or sewage works, as herein-before described, the dust resulting from the breakage may be scattered 30 amongst it, so as to form a filter bed, through which the urine or sewage is to be passed ; or if to be used for any other purpose it should be ground to coarse powder, and added to the urine or sewage or other material to be clarified, disinfected, or purified in a drain or otherwise, either by covering over the said impure matters with the said material, 35 mixing therewith, or filtering as special cases may require.

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Having now described the nature and object of my said Invention for  
“Improvements in the Treatment of Sewage, and in the Manufacture of  
Manure therefrom,” I hereby declare my Invention to consist in and I  
claim, treating sewage and manufacturing manure therefrom in the  
5 manner above stated.

In witness whereof, I, the said Walter Brown, have hereunto set  
my hand and seal, this Twenty-ninth day of October, in the  
year of our Lord One thousand eight hundred and seventy-  
three.

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WALTER BROWN. (L.S.)

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